INSTITUTION	NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS					
SCHOOL	SCHOOL OF SCIENCE					
DEPARTMENT	INFORMATICS AND TELECOMMUNICATIONS					
COURSE LEVEL	GRADUATE					
COURSE TITLE	**Speech Recognition & Speech Synthesis Technologies**					
COURSE CODE	C31		Semester	2	ECTS	6
TEACHING HOURS per week	THEORY	2	SEMINAR.		LABORATORY	1
URL	https://eclass.uoa.gr/courses/DI524/					

COURSE CONTENT
The course covers the basics of automatic speech recognition and synthesis systems.   The first part is dedicated to speech recognition and covers the following topics: Data collection for speech recognition – Acoustic feature extraction – Acoustic modeling - Language modeling - Evaluation and optimization of a speech recognition system – Overview of state-of-the-art speech recognition systems - Development of a speech recognition system   The second part of the course is about text-to-speech synthesis and will cover the following topics: Data collection for speech synthesis - Types of speech synthesis systems - Text processing for Speech synthesis – Speech modeling for parametric speech synthesis- State-of-the-art speech synthesis systems - Development of a speech synthesis system   Last, the course will cover the basics of the application of these technologies in speech-to-speech translation and spoken dialogue systems.

STUDENT LEARNING OBJECTIVES
Teaching-Learning Goals-Expected Learning Outcomes Upon successful completion of the course the student will be able to: - Build a large vocabulary continuous speech recognition system using open-source toolkits and public domain speech data (in English or other language)   - Build a basic speech synthesis system using open-source toolkits and public domain speech data (in English or other language)   - Systematically analyze the performance of speech recognition and synthesis systems   - Demonstrate how pre-existing speech recognition and synthesis systems can be adapted to new languages and applications.

TEACHING AND LEARNING METHODS - ASSESSMENT	
TEACHING METHOD	Hybrid: In Class (Face to Face) / Remote Sessions (Online)

USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	Learning process supported by the e-class platform: Discussions, Announcements, Task assignments, Student groups Email communication Live transmission of lectures Ability to track recorded lectures

TEACHING ORGANIZATION

Describe in detail the way and methods of teaching:
Enhanced Lectures,
Online Lectures,
Seminars,
Tutorial,
Laboratory,
Laboratory Exercise,
Study & analysis of literature,
Practice (Positioning),
Interactive teaching,
Developing a project,
Individual / group work
Telework (reference to tools) etc.

Details of the student's study hours for each learning activity and hours of non-guided study are shown to ensure that the total workload at the semester corresponds to the ECTS

Activity	Student Workload (hours)
Lectures	26
Laboratory	13
Teamwork in a case study	46
Small individual exercises	15
Independent Study	50
Total Course **(25 hours of workload per unit of credit)**	**150**

ASSESSMENT OF STUDENTS

Description of the assessment process

Assessment Methods, Formative or Concluding, Multiple Choice Test, Quick Response Questions, Test Development Questions, Problem Solving, Written Work, Report / Report, Oral Examination, Public Presentation, Laboratory Work, Other / Other

Fully defined evaluation criteria are mentioned and if and where they are accessible to students.

Describe explicitly methods, evaluation tools and provided feedback.
The table below is supplemented accordingly.

Assessment methods	Number	Percentage
Exercises	4	40%
Laboratory	4	40%
Final project	1	20%

LITERATURE AND STUDY MATERIALS / READING LIST

1. Speech and Language Processing, Dan Jurafsky and James Martin (https://web.stanford.edu/~jurafsky/slp3/)
2. Automatic Speech Recognition: A Deep Learning Approach, Dong Yu, Li Deng, 2015
3. Text-to-Speech Synthesis, Paul Taylor, 2009